

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C. 20231  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 13 October 2000 (13.10.00)	
<b>International application No.</b> PCT/EP00/00669	<b>Applicant's or agent's file reference</b> 1838PTWO
<b>International filing date (day/month/year)</b> 28 January 2000 (28.01.00)	<b>Priority date (day/month/year)</b> 01 February 1999 (01.02.99)
<b>Applicant</b> IACOBUCCI, Emilio	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
30 August 2000 (30.08.00)

☐ in a notice effecting later election filed with the International Bureau on:  
\_\_\_\_\_

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer S. De Michiel Telephone No.: (41-22) 338.83.38
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(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
10 August 2000 (10.08.2000)

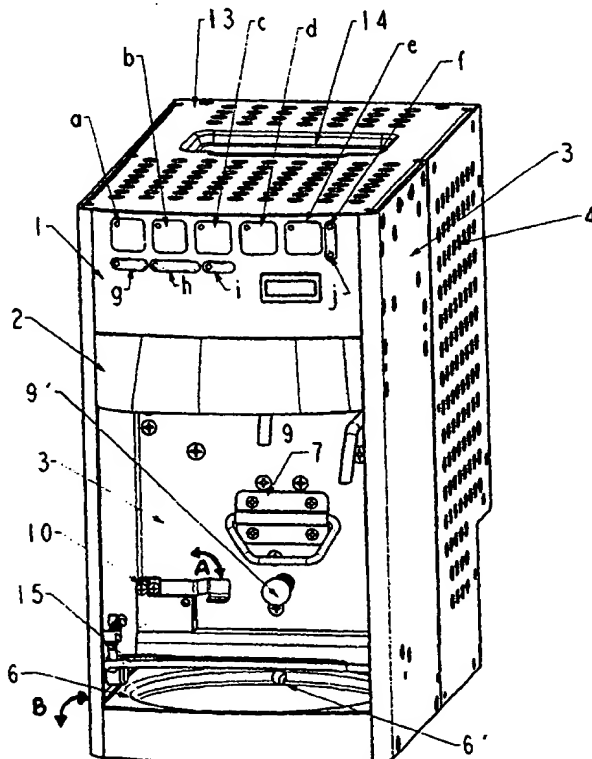
PCT

(10) International Publication Number  
**WO 00/45685 A3**

- (51) International Patent Classification<sup>7</sup>: **A47J 31/00**, 31/44, 31/54 (74) Agent: **GERVASI, Gemma**; Notarbartolo & Gervasi S.p.A., Corso di Porta Vittoria 9, I-20122 Milan (IT).
- (21) International Application Number: **PCT/EP00/00669** (81) Designated States (*national*): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (22) International Filing Date: 28 January 2000 (28.01.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
RM99U000017 1 February 1999 (01.02.1999) IT (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): **IACOBUCCI S.P.A.** [IT/IT]; Località Colle Baiocco, I-03013 Ferentino (IT).
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): **IACOBUCCI, Emilio** [IT/IT]; Via Sodine 51, I-03100 Frosinone (IT).
- Published:  
— With international search report.

[Continued on next page]

(54) Title: MACHINE FOR AMERICAN-STYLE COFFEE FOR USE ON AIRCRAFT



(57) Abstract: Machine for use in aircraft that is able to dispense hot beverages, such as coffee, American-style coffee and tea, as well as to dispense hot and cold water, the said machine being provided with a hydraulic circuit and an electrical circuit and being governed by software, and having a basically parallelepiped structure comprising: a structural panelling and a panelling forming a covering, an open front compartment in which a container or jug for beverages is housed, there being present above the said compartment a front control panel (1) and an underlying cartridge-holder drawer (2) which can be pulled out, the said machine being comprising at least one heater (22), inside which water is made to pass only at the moment of dispensing in the form of a beverage or of hot water, the said heater (22) being correspondingly and operatively connected to the cartridge-holder drawer (2), the operation being obtained by means of a hydraulic actuation system which vertically forces the heater (22) to come down onto the cartridge-holder drawer (2) so as to close it basically in a sealed manner when the beverage or hot water is being dispensed.

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(88) Date of publication of the international search report:  
30 November 2000

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/00669

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A47J31/00 A47J31/44 A47J31/54

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A47J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 387 515 A (NORDSKOG) 19 September 1990 (1990-09-19)  column 7, line 34 -column 22, line 1; figures 2,3,8,21	1,2,4,5, 10,11, 14,15, 18-23,28
A		12,13, 29-33
X	CA 2 121 998 A (GODFREY AEROSPACE INC.) 22 October 1995 (1995-10-22) page 5, line 26 -page 8, line 1; figures	1,2,4, 14,23,28
A		5,29-33
A	US 5 647 269 A (MILLER ET AL) 15 July 1997 (1997-07-15) column 3, line 3 -column 6, line 48; figures	1,2,4, 23-26
	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

4 August 2000

Date of mailing of the international search report

17.08.2000

Name and mailing address of the ISA

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NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Bodart, P

# INTERNATIONAL SEARCH REPORT

Inter. onal Application No

PCT/EP 00/00669

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 353 425 A (BRAUN AG) 7 February 1990 (1990-02-07) column 6, line 29 -column 8, line 7; figures ----	34, 39-43
A	US 4 975 559 A (FRISCH) 4 December 1990 (1990-12-04) column 2, line 43 -column 3, line 11; figures 1-4 ----	34, 39-43
A	DE 298 17 065 U (FRITZ EICHENAUER GMBH & CO KG) 21 January 1999 (1999-01-21) page 4; claims 2,7; figures -----	34

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 00/00669

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-33,44

Coffee machine for use in a aircraft

2. Claims: 34-43

Heater having a plane conformation

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/00669

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 387515	A	19-09-1990	US 4949627 A	21-08-1990
			AU 4795790 A	13-09-1990
			CA 2011739 A	09-09-1990
			CN 1045373 A	19-09-1990
			JP 3198820 A	30-08-1991
			ZA 9000702 A	31-10-1990
CA 2121998	A	22-10-1995	NONE	
US 5647269	A	15-07-1997	NONE	
EP 353425	A	07-02-1990	DE 3825166 A	25-01-1990
US 4975559	A	04-12-1990	CH 675819 A	15-11-1990
			AT 82840 T	15-12-1992
			AU 615859 B	10-10-1991
			AU 3520489 A	14-12-1989
			BR 8902743 A	01-02-1990
			CA 1311007 A	01-12-1992
			DE 68903687 D	14-01-1993
			DE 68903687 T	01-04-1993
			DK 169303 B	10-10-1994
			EP 0345528 A	13-12-1989
			FI 892840 A, B,	11-12-1989
			GR 3006526 T	30-06-1993
			JP 1851545 C	21-06-1994
			JP 2036822 A	06-02-1990
			JP 5070453 B	05-10-1993
			MX 170704 B	08-09-1993
			NO 892359 A, B,	11-12-1989
			NZ 229279 A	26-05-1992
			PT 90789 A, B	29-12-1989
			ZA 8904154 A	28-03-1990
DE 29817065	U	21-01-1999	NONE	

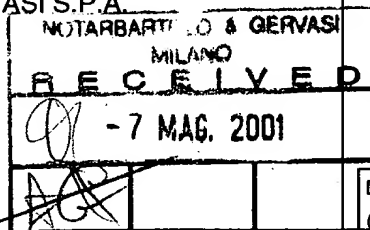


From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

GERVASI, G.  
NOTARBARTOLO & GERVASI S.P.A.  
Corso di Porta Vittoria, 9  
20122 Milano  
ITALIE



NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Date of mailing  
(day/month/year) 04.05.2001

Applicant's or agent's file reference  
1838PTWO

**IMPORTANT NOTIFICATION**

International application No.  
PCT/EP00/00669

International filing date (day/month/year)  
28/01/2000

Priority date (day/month/year)  
01/02/1999

Applicant  
IACOBUCCI S.P.A. et al

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



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D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
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Authorized officer

Marra, E

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# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>1838PTWO</b>	<div style="display: flex; justify-content: space-between;"> <div><b>FOR FURTHER ACTION</b></div> <div>See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)</div> </div>	
International application No. <b>PCT/EP00/00669</b>	International filing date ( <i>day/month/year</i> ) <b>28/01/2000</b>	Priority date ( <i>day/month/year</i> ) <b>01/02/1999</b>
International Patent Classification (IPC) or national classification and IPC <b>A47J31/00</b>		
Applicant <b>IACOBUCCI S.P.A. et al</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
  
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
 

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 11 sheets.

3. This report contains indications relating to the following items:

- I    ☒ Basis of the report
- II    ☐ Priority
- III    ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV    ☒ Lack of unity of invention
- V    ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI    ☐ Certain documents cited
- VII    ☐ Certain defects in the international application
- VIII    ☒ Certain observations on the international application

Date of submission of the demand  <b>30/08/2000</b>	Date of completion of this report  <b>04.05.2001</b>
Name and mailing address of the international preliminary examining authority:  <div style="display: flex; align-items: center;"> <div>                     European Patent Office                      D-80298 Munich                      Tel. +49 89 2399 - 0 Tx: 523656 epmu d                      Fax: +49 89 2399 - 4465                 </div> </div>	Authorized officer  <b>Sunnhagen, A</b>  Telephone No. +49 89 2399 2427



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/00669

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1,3-17	as originally filed	
2,2a	with telefax of	18/04/2001

**Claims, No.:**

1-44	with telefax of	18/04/2001
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**Drawings, sheets:**

1/13-13/13	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
  - ☐ the language of publication of the international application (under Rule 48.3(b)).
  - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
  - ☐ filed together with the international application in computer readable form.
  - ☐ furnished subsequently to this Authority in written form.
  - ☐ furnished subsequently to this Authority in computer readable form.
  - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
  - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
4. The amendments have resulted in the cancellation of:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/00669

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☒ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:  
**see separate sheet**

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.
- ☒ the parts relating to claims Nos. 1-33.

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1-33
	No:	Claims

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP00/00669

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Inventive step (IS)	Yes:	Claims	1-33
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-33
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP00/00669

**Re Item IV**

**Lack of unity of invention**

I. This International Examining Authority has found multiple groups of inventions in this international application, as follows:

1. Claims 1-33

Coffee machine (for use in an aircraft)

2. Claims 34-39

Heater having a plane conformation

Claim 40

Cartridge-holder drawer/heater assembly

Claims 41 - 43

The use of such a heater

3. Claims 44

Use of aluminium elements

These groups of features are not so linked as to form a single general inventive concept, since the groups of claims do not disclose any common subject matter.

Since the applicant has not restricted the claims to *one group* nor paid the additional taxes required, the *examination has only been carried out concerning claims 1- 33 in accordance with Art. 34 (3)(c) EPC.*

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP00/00669

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: EP-A-387 515  
D2: CA-A-2 121 998  
D3: EP-A-353 425  
D4: US-A-3 596 588

The document D4 was not cited in the international search report. A copy of the document was appended to the written opinion.

2. a) Document D1, which is considered to represent the most relevant state of the art, discloses (cf. Abstract; col.1, l.25 - col.3, l.12; col.4, l.36 - col.5, l.40; col.7, l.34 - col.9, l.6; col.11, l.2-35; col.12, l.30-41; col.17, l.7-19; Figs.1-4,21) a Coffee Maker (CM) for use in an aircraft comprising an electrical circuit, having a parallelepipedal structure, structural panelling 32, 34, container for beverages 44, a cartridge holder 66 and a heater 120 inside which water is made to pass only at the moment of dispensing in the form of hot beverage or hot water, from which the subject-matter of claim differs in that there is a hydraulic circuit provided with a actuation system which vertically forces the heater to come down onto the cartridge holder drawer so as to close it in a sealed manner and also that the CM is governed by software.

The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).

The problem to be solved by the present invention may therefore be regarded as to increase safety and facilitate the control of the brewing process.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP00/00669

D2 (cf. p.1, l.23-27; p.2, l.15 - p.3, l.7; p.4, l.11-28; p.5, l.26 - p.8, l.1; Figs.1 and 2) describes a CM where the hot water conduit 17 is brought down onto the cartridge holder 3,5 by mechanical means. D2 does not disclose any use of software.

D3 (cf. Abstract; Figs.1-3) discloses a flat heating element for the use with CMs.

D4 (cf. Abstract; col.2, l.7-56; col.4, l.48 - col.5, l.65; Figs.1-4) discloses a CM for air craft use, where control means 28 are used and the hot water inlet is forced down by manual/mechanical 116 means on the package receptacle 90.

No known document would give the person skilled in the art any lead to find the solution of claim 1.

b) Claims 2-33 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

**Re Item VIII**

**Certain observations on the international application**

1. The terms "Hansen 2KLF16 and MS3106A-16S-1P" employed in claim 20 and appearing to be a trade mark has no precise meaning as they are not internationally accepted as standard descriptive terms, thereby rendering the definition of the subject-matter of this claim 20 unclear (Article 6 PCT).



## PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

INFORMATION CONCERNING ELECTED  
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

To:

GERVASI, Gemma  
 Notarbartolo & Gervasi S.p.A.  
 Corso di Porta Vittoria  
 I-20122 Milan  
 ITALIE



Date of mailing (day/month/year) 13 October 2000 (13.10.00)		
Applicant's or agent's file reference 1838PTWO <i>Arch.</i>		
IMPORTANT INFORMATION		
International application No. PCT/EP00/00669	International filing date (day/month/year) 28 January 2000 (28.01.00)	Priority date (day/month/year) 01 February 1999 (01.02.99)
Applicant IACOBUCCI S.P.A. et al		

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

AP : GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW

EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

National : AU, BG, CA, CN, CZ, DE, IL, JP, KP, KR, MN, NO, NZ, PL, RO, RU, SE, SK, US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

National : AE, AL, AM, AT, AZ, BA, BB, BR, BY, CH, CR, CU, DK, DM, EE, ES, FI, GB, GD, GE, GH,  
 GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MW, MX, PT, SD,  
 SG, SI, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO  
 34, chemin des Colombettes  
 1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:

S. De Michiel

Telephone No. (41-22) 338.83.38

# PATENT COOPERATION TREATY

PCT

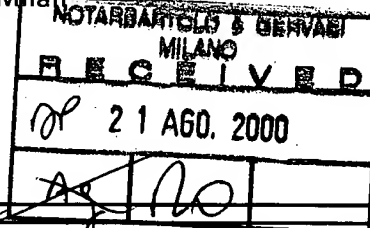
## NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

To:

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Date of mailing (day/month/year) 10 August 2000 (10.08.00)		
Applicant's or agent's file reference 1838PTWO		IMPORTANT NOTICE
International application No. PCT/EP00/00669	International filing date (day/month/year) 28 January 2000 (28.01.00)	Priority date (day/month/year) 01 February 1999 (01.02.99)
Applicant IACOBUCCI S.P.A. et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
AU,JP,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:  
AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,GE,GH,GM,HR,HU,ID,IL,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW  
The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on  
10 August 2000 (10.08.00) under No. WO 00/45685

### REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

### REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  J. Zahra
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## PATENT COOPERATION TREATY

REC'D 08 MAY 2001

## PCT

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 1838PTWO	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP00/00669	International filing date (day/month/year) 28/01/2000	Priority date (day/month/year) 01/02/1999
International Patent Classification (IPC) or national classification and IPC A47J31/00		
Applicant IACOBUCCI S.P.A. et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 7 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 11 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  30/08/2000	Date of completion of this report  04.05.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Sunnhagen, A  Telephone No. +49 89 2399 2427 

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/00669

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

1,3-17	as originally filed	
2,2a	with telefax of	18/04/2001

### Claims, No.:

1-44	with telefax of	18/04/2001
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### Drawings, sheets:

1/13-13/13	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/00669

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☒ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:  
**see separate sheet**

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.
- ☒ the parts relating to claims Nos. 1-33.

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1-33
	No:	Claims

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/00669

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Inventive step (IS)      Yes:    Claims    1-33  
                                     No:    Claims

Industrial applicability (IA)    Yes:    Claims    1-33  
                                     No:    Claims

2. Citations and explanations  
    **see separate sheet**

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP00/00669

**Re Item IV**

**Lack of unity of invention**

- I. This International Examining Authority has found multiple groups of inventions in this international application, as follows:

1. Claims 1-33

Coffee machine (for use in an aircraft)

2. Claims 34-39

Heater having a plane conformation

Claim 40

Cartridge-holder drawer/heater assembly

Claims 41 - 43

The use of such a heater

3. Claims 44

Use of aluminium elements

These groups of features are not so linked as to form a single general inventive concept, since the groups of claims do not disclose any common subject matter.

Since the applicant has not restricted the claims to *one group* nor paid the additional taxes required, the *examination has only been carried out concerning claims 1- 33 in accordance with Art. 34 (3)(c) EPC.*

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP00/00669

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: EP-A-387 515  
D2: CA-A-2 121 998  
D3: EP-A-353 425  
D4: US-A-3 596 588

The document D4 was not cited in the international search report. A copy of the document was appended to the written opinion.

2. a) Document D1, which is considered to represent the most relevant state of the art, discloses (cf. Abstract; col.1, l.25 - col.3, l.12; col.4, l.36 - col.5, l.40; col.7, l.34 - col.9, l.6; col.11, l.2-35; col.12, l.30-41; col.17, l.7-19; Figs.1-4,21) a Coffee Maker (CM) for use in an aircraft comprising an electrical circuit, having a parallelepipedal structure, structural panelling 32, 34, container for beverages 44, a cartridge holder 66 and a heater 120 inside which water is made to pass only at the moment of dispensing in the form of hot beverage or hot water, from which the subject-matter of claim differs in that there is a hydraulic circuit provided with a actuation system which vertically forces the heater to come down onto the cartridge holder drawer so as to close it in a sealed manner and also that the CM is governed by software.

The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).

The problem to be solved by the present invention may therefore be regarded as to increase safety and facilitate the control of the brewing process.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP00/00669

D2 (cf. p.1, l.23-27; p.2, l.15 - p.3, l.7; p.4, l.11-28; p.5, l.26 - p.8, l.1; Figs.1 and 2) describes a CM where the hot water conduit 17 is brought down onto the cartridge holder 3,5 by mechanical means. D2 does not disclose any use of software.

D3 (cf. Abstract; Figs.1-3) discloses a flat heating element for the use with CMs.

D4 (cf. Abstract; col.2, l.7-56; col.4, l.48 - col.5, l.65; Figs.1-4) discloses a CM for air craft use, where control means 28 are used and the hot water inlet is forced down by manual/mechanical 116 means on the package receptacle 90.

No known document would give the person skilled in the art any lead to find the solution of claim 1.

b) Claims 2-33 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

**Re Item VIII**

**Certain observations on the international application**

1. The terms "Hansen 2KLF16 and MS3106A-16S-1P" employed in claim 20 and appearing to be a trade mark has no precise meaning as they are not internationally accepted as standard descriptive terms, thereby rendering the definition of the subject-matter of this claim 20 unclear (Article 6 PCT).

a year.

At present, in the aviation field there exist coffee machines, in particular machines for dispensing American-style coffee, tea, or other hot beverages, the design of which is obsolete and which are certainly inadequate for current needs of weight-saving associated to improved functionality and safety. The said machines use a boiler container which remains pressurized for the whole time that the machines are switched on, a period in which the water is heated by means of direct contact with one or more resistors. Airline companies have therefore on numerous occasions expressed the need for innovative coffee machines characterized in particular by reduced weight and maintenance and by improved safety features.

In particular, EP-A-387515 discloses a coffee maker for use in aircrafts which does not comprise an hydraulic circuit provided with an actuation system which vertically forces the heater to come down onto the cartridge holder drawer so as to close it in a sealed manner and also said coffee maker is not governed by a software. In addition CA 2121998, EP-A-353425 and US 3596588 do not disclose any elements to provide an increased safety and easiness of the control of the brewing process.

There has now been found a specific combination of parts and an adequate choice of components, materials and forms which enable the construction of innovative machines that are able to dispense coffee, the so-called American or American-style coffee, and other hot beverages. The machine configuration and conformation described herein produce a longer-lasting device which is easier to use, safer, and lighter than the machines that are currently known. Further advantages of the invention will be evident from the following description.

In the present description the words "exchanger" and "heater" will be used indifferently, meaning thereby a thermal set comprising heating elements and elements designed for the passage of the fluid that is to be heated.

#### **Summary of invention**

An object of the present invention is a machine that is able to dispense hot beverages, such as coffee, American-style coffee, tea, and/or hot and cold water, in accordance with the attached claims. In particular, the machine comprises a

## 2a

load-bearing structure substantially made of aluminium, side panels, and base and head substantially made of aluminium, the said machine being characterized in that it comprises elements configured and conformed in such a way as to be used in the aviation field.

- 5 A further object of the invention is a heater with two faces for heating liquids that may be used both in coffee machines of the type used on aircraft and in traditional coffee machines.

Further objects of the present invention will be evident from the ensuing

## CLAIMS

- 1 1. Machine, in particular for use on aircraft, that is able to dispense hot beverages,  
2 such as coffee, American-style coffee and tea in pre-set quantities, as well as to  
3 dispense hot and cold water, the said machine having a basically parallelepipedal  
4 structure comprising: a structural panelling and a panelling forming a covering, an  
5 open front compartment in which a container or jug for beverages is housed, there  
6 being present above the said compartment a front control panel (1) and an  
7 underlying cartridge-holder drawer (2) which can be pulled out, the said machine  
8 being characterized in that it is provided with a hydraulic circuit and an electrical  
9 circuit governed by software and it comprises at least one heater (22) inside which  
10 water is made to pass only at the moment of dispensing in the form of a beverage  
11 or of hot water, the said heater (22) being correspondingly and operatively  
12 connected to the cartridge-holder drawer (2), the operativeness being obtained by  
13 means of a hydraulic actuation system which vertically forces the heater (22) to  
14 come down onto the cartridge-holder drawer (2) so as to close it basically in a  
15 sealed manner when the beverage or hot water is being dispensed.
- 1 2. Machine according to Claim 1, in which the structural panelling is U-shaped  
2 panelling (3, 3') substantially made of aluminium.
- 1 3. Machine according to Claim 1, in which the covering panelling comprises a top  
2 panel 13 and perforated rear side panels 4.
- 1 4. Machine according to the previous claims, in which the open compartment is  
2 basically delimited by the bottom wall of the cartridge-holder drawer (2), by the  
3 panelling (3, 3'), and by a plate (6) for supporting the jug.
- 1 5. Machine according to the previous claims, in which present on the wall (3') are  
2 a spring-type sensor (8) which detects the presence of the jug when this is  
3 inserted and pressed against the said sensor (8), and a dispensing spout (9) for  
4 delivery of hot or cold water.
- 1 6. Machine according to the previous claims, in which located on the wall (3'), at  
2 the bottom, is a handle (10) that can be raised or lowered so as to raise or lower  
3 correspondingly a pin which slides in guides (11) and which is designed to clamp  
4 the machine in position in the special housings provided on aircraft.

1 7. Machine according to the previous claim, further equipped with channel-section  
2 guides (12) located on the underside of the machine, which are designed to slide  
3 on corresponding rails present in the housings provided on aircraft.

1 8. Machine according to Claim 4, in which the plate (6) is slightly inclined towards  
2 the rear of the machine and has a drainage hole (6') connected to a discharge.

1 9. Machine according to Claim 4, in which the plate (6) rests on a load-cell system  
2 that is able to detect the presence and weight of the jug and correspondingly  
3 control filling thereof.

1 10. Machine according to the previous claims, further provided with a safety fixing  
2 device for the jug, basically consisting of a spring-operated shaped rod (15), the  
3 rod (15) having to be lowered manually for insertion of the jug, the latter, once it is  
4 housed on the plate (6), being held in position by the rod (15) which, being  
5 activated by the spring, comes back up.

1 11. Machine according to the previous claim, in which the rod (15) coming back up  
2 holds the jug pressed against the presence sensor (8).

1 12. Machine according to Claim 1, in which the covering panelling comprises a  
2 first, perforated, rear panel (16) and a second, structural, rear panel (17), the said  
3 latter panelling carrying a connector for water (18), an electrical connector (20)  
4 and a manually resettable circuit breaker (19).

1 13. Machine according to Claim 1, in which the front control panel (1) is of the  
2 touch-sensor type, with the controls of the various functions silk-screen printed on  
3 it, as follows: a) ON/OFF switch; b) "coffee" switch; c) "tea" switch; d) "hot water"  
4 switch; e) "cold water" switch; f) "blocked" indicator; g) "ready" indicator; h) "no  
5 water" indicator; i) "failure" indicator; and j) "released" indicator.

1 14. Machine according to Claim 1, in which the drawer (2) opens and closes in a  
2 sliding way and has two locking positions whereby, once the drawer (2) has been  
3 completely inserted into the machine, it may subsequently be pulled out only  
4 partially for inserting or removing the cartridge during normal machine operation.

1 15. Machine according to the previous claims, characterized in that it is made  
2 without any pressurized boiler for heating water.

1 16. Machine according to the previous claims, which is able to supply steam.

1 17. Machine according to the previous claims, in which two heaters are provided:  
2 one for delivering hot water and hot beverages, and one for delivering steam.

1 18. Machine according to the previous claims, having the following technical  
2 specifications: depth 310-390 mm; width 150-180 mm; height 290-340 mm; weight  
3 11-16.7 kg; power supply 115 V, 400 Hz three-phase or 28 Vdc; power up to  
4 3500 W; pressure of incoming water 0.3-5.0 bar.

1 19. Machine according to the previous claim, in which the incoming-water  
2 pressure is 1.5-2.0 bar.

1 20. Machine according to the previous claims, in which the water connector (18)  
2 and the electrical connector (20) are, respectively, Hansen 2KLF16<sup>(TM)</sup> and  
3 MS3106A-16S-1P<sup>(TM)</sup>.

1 21. Machine according to the previous claims, in which the printed-circuit boards  
2 required for machine operation are surface-treated with a protective treatment so  
3 as to withstand vibrations, be resistant to humidity, and be resistant to organic  
4 contaminants.

1 22. Machine according to the previous claims, in which the electrical circuit is built  
2 so as not to create any electromagnetic interference with the instrumentation on  
3 board the aircraft and, at the same time, so as not to be affected by the said  
4 instrumentation, by means of a filtering system which is designed basically to  
5 eliminate the high-frequency components which generate electromagnetic waves.

1 23. Machine according to the previous claims, further comprising a pressure  
2 sensor (101) which detects the pressure of the water entering the machine, and  
3 an air valve (110) calibrated so as to prevent overpressures.

1 24. Machine according to the previous claims, further comprising a filter to prevent  
2 deposition of lime at the machine inlet.

1 25. Machine according to the previous claims, further comprising at least one  
2 hydraulic distributor, the said distributor being basically a parallelepipedal element  
3 inside which channels are made for the passage of water, the said channels being  
4 arranged in such a way as to create the appropriate connection between a  
5 plurality of header-type solenoid valves. \_

1 26. Machine according to the previous claim, in which the solenoid valves are of

2 two types, two-way ones and three-way ones, the two-way solenoid valves  
3 controlling the flow of water by opening and closing, and the three-way solenoid  
4 valves presenting a further outlet to the discharge so that, when they are in the  
5 de-energized condition or are de-energized on account of overpressure, they  
6 open to the discharge.

1 27. Machine according to the previous claims, further provided with a serial port of  
2 the type that may be connected to a personal computer.

1 28. Machine according to the previous claims, used on other means of transport,  
2 such as trains, high-speed trains, ships and the like.

1 29. Machine according to the previous claims, in which selection of the "coffee"  
2 function is according to the following operation steps:

3 6.1 press "coffee" switch

4 6.2 is the "water in line" condition present?

5 6.3 is the "low pressure in line" condition present?

6 6.4 is the "no water" led permanently on?

7 6.5 "no water" led flashing | stop

8 6.6 is the "temperature ready" condition present?

9 6.7 start-up of "10-sec timer"

10 6.8 is the condition "server ok" present?

11 6.9 is the condition "cartridge-holder in position" present?

12 6.10 "coffee" led flashing

13 6.11 does the "10-sec timer" stop? | stop

14 6.12 stop of "10-sec timer"

15 6.13 start-up of "4-min timer"

16 6.14 start-up of "2-sec timer"

17 6.15 does the "2-sec timer" stop?

18 6.16 is the condition "cartridge-holder in position" present?

19 6.17 "failure" led lights up | stop

20 6.18 does solenoid valve 113 deactivate?

21 6.19 flow meter 103 starts count

22 6.20 start-up of "10-sec timer"

- 23 6.21 activates solenoid valves 104 and 106
- 24 6.22 does the "10-sec timer" stop?
- 25 6.23 stops pump and deactivates solenoid valves 104 and 106
- 26 6.24 start-up of "10-sec timer"
- 27 6.25 does the "10-sec timer" stop?
- 28 6.26 starts up pump and activates solenoid valves 104 and 106
- 29 6.27 does the flow meter stop count?
- 30 6.28 is the condition "server active" present?
- 31 6.29 does the "4-min timer" stops?
- 32 6.30 stops pump and counters and deactivates solenoid valves 106 and 112 -
- 33 increases by one the "coffee cycles" counter | stop
- 34 and coffee is dispensed in a quantity of  $1.5 \text{ l} \pm 10\%$  at a temperature of
- 35 approximately  $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$  in approximately 2 min 45 sec  $\pm 15$  sec, the "coffee"
- 36 function being operative only if the following conditions are satisfied: - a pressure
- 37 sensor reads a line pressure of 0.3-5.0 bar; - a temperature probe in the
- 38 exchanger (22) reads a value of approximately  $98^{\circ}\text{C}$  when the function is
- 39 requested; - an optical sensor is ON, this meaning that the jug is present; - a first
- 40 microswitch is ON, this meaning that the drawer (2) is completely inserted; and - a
- 41 second microswitch is ON two seconds after the request for coffee, this meaning
- 42 that a hydraulic piston is pressing against the exchanger (22) and the drawer (2)
- 43 during dispensing; during delivery, if one of the aforesaid conditions is no longer
- 44 satisfied, with the exception of the condition regarding the temperature probe, the
- 45 function is immediately interrupted; end-of-delivery being controlled by a flow
- 46 meter; a second safety system being present, which is controlled by the force
- 47 sensor located underneath the plate (6) on which the jug rests and which
- 48 interrupts delivery by checking the weight of the jug that is being filled; in addition,
- 49 a 4-minute timer interrupting delivery if none of the above-mentioned devices is
- 50 working; the "coffee" function being also interruptible when the "coffee" switch on
- 51 the front control panel is pressed again.
- 1 30. Machine according to the previous claims, in which selection of the "tea"
- 2 function is according to the procedure described in the previous claim and



- 3 according to the following operation steps:
- 4 7.1 press "tea" switch
- 5 7.2 is the "water in line" condition present?
- 6 7.3 is the "low pressure in line" condition present?
- 7 7.4 is the "no water" led permanently on?
- 8 7.5 is the "no water" led flashing? | stop
- 9 7.6 is the "temperature ready" condition present? | stop
- 10 7.7 start-up of "10-sec timer"
- 11 7.8 is the condition "server ok" present?
- 12 7.9 is the condition "cartridge-holder in position" present?
- 13 7.10 "tea" led flashing
- 14 7.11 does the "10-sec timer" stop? | stop
- 15 7.12 stop of "10-sec timer"
- 16 7.13 start-up of "4-min timer"
- 17 7.14 flow meter 103 starts count
- 18 7.15 starts up pump and activates solenoid valves 104 and 107
- 19 7.16 does flow meter finish count?
- 20 7.17 is the "server active" condition present?
- 21 7.18 does the "4-min" counter stop?
- 22 7.19 stops pumps and counters and deactivates solenoid valves 104 and 107 -
- 23 increases by one the "tea cycles" counter | stop.
- 1 31. Machine according to the previous claims, in which selection of the "hot water"
- 2 function is according to the following operation steps:
- 3 8.1 press "hot water" switch
- 4 8.2 is the "water in line" condition present?
- 5 8.3 is the "low pressure in line" condition present?
- 6 8.4 is the "no water" led permanently on?
- 7 8.5 "no water" led flashing | stop
- 8 8.6 is the "temperature ready" condition present? | stop
- 9 8.7 start-up of "20-s c timer"
- 10 8.8 starts up pumps and activates sol noid valves 104 and 108

11 8.9 "20-sec" timer stops

12 8.10 stops pumps and deactivates solenoid valves 104 and 108 - increases by  
13 one the "hot water cycles" counter | stop  
14 and hot water is dispensed in a quantity of approximately 0.25 l at a temperature  
15 of approximately 85°C  $\pm$ 5°C in approximately 30 sec., the "hot water" function  
16 being operative only if the following conditions are satisfied: - a pressure sensor  
17 reads a line pressure of 0.3-5.0 bar; - a temperature probe in the exchanger (22)  
18 reads a value of approximately 98°C when the function is requested; during  
19 delivery, if the first condition is no longer satisfied, the function is immediately  
20 interrupted; delivery being interrupted after 30 sec, or else by pressing the "hot  
21 water" switch on the front control panel again.

1 32. Machine according to the previous claims, in which selection of the "cold  
2 water" function is according to the following operation steps:

3 9.1 press "cold water" switch

4 9.2 is the "water in line" condition present?

5 9.3 is the "low pressure in line" condition present?

6 9.4 is the "no water" led permanently on?

7 9.5 "no water" led flashing | stop

8 9.6 start-up of "20-sec timer"

9 9.7 starts up pump and activates solenoid valve 111

10 9.8 "20-sec" timer stops

11 9.9 stops pump and deactivates solenoid valve 111 - increases by one the "cold  
12 water cycles" counter | stop

13 and cold water is dispensed in a quantity of approximately 0.25 l at room  
14 temperature, the "cold water" function being operative only if the pressure sensor  
15 reads a line pressure of 0.3-5.0 bar, delivery being interrupted after 30 sec, or else  
16 by pressing the "cold water" switch on the front control panel again.

1 33. Machine according to the previous claims, in which the pressure of the  
2 incoming water is controlled by a pressure sensor (101) set at the machine  
3 operating pressure, and the water then reaches the pumps (102) and (109), which  
4 send it on, via the flow meter (103), towards the elements controlling the following

5 functions: "hot water", via the solenoid valve (108), "coffee", via the solenoid valve  
6 (106), "cold water", via the solenoid valve (111), and "tea", via the solenoid valve  
7 (107), part of the water bring also used to push the piston (114) together with the  
8 exchanger (22) against the cartridge-holder drawer (2), the cold water moreover  
9 passing through the pump (109) and the solenoid valve (111), which controls the  
10 "cold water" function.

1 34. Heater (22) made of machined anodized aluminium, having basically a plane  
2 conformation and comprising of four elements: a central element (24), inside  
3 which at least one resistor is embedded, the top and bottom surfaces of the  
4 element (24) being furrowed by grooves or coils (24e) and (24f) having a  
5 semicircular cross section and being in communication through a hole (24c), and  
6 being moreover sized, in terms of length and section, according to the amount of  
7 water that is to be heated, the central element (24) being moreover closed in a  
8 sealed manner between a further two plane elements, an overlying element (25)  
9 and an underlying element (26), the element (25) being in turn provided, on its top  
10 face, with recesses or hollows made for lightening the structure (25a), the  
11 underlying element (26) being in turn provided, on its bottom face, with a recess  
12 (26a), whilst its top face is basically plane.

1 35. Heater according to the previous claim, in which the water inlet and water  
2 outlet are, respectively, (25b) and (25c), the said heater (22) being  
3 correspondingly and operatively connected to a cartridge-holder drawer (2), the  
4 operativon being obtained by means of a hydraulic actuation system which  
5 vertically forces the heater (22) to come down onto the cartridge-holder drawer (2)  
6 so as to close it basically in a sealed manner when the hot water or beverage is  
7 being dispensed.

1 36. Heater according to the previous claim, in which the operating connection is  
2 such that the heater (22) moves along travel guides (23), assisted by the presence  
3 of springs, the said movement being produced by a hydraulic piston, the said  
4 piston being pressurized by a pump.

1 37. Heater according to the Claims 34-36, in which the bottom face of the element  
2 (26), provided with the recess (26a), is connected in a sealed mann r to a

3 perforated plate (27), which fac s and/or is in contact with the cartridge housed  
4 inside the drawer (2).

1 38. Heater according to the previous claim, in which the recess (26a) has a  
2 thickness of approximately 0.8 mm.

1 39. Heater according to Claims 34-38, in which the element (25) is further  
2 provided with a hole (25b) for intake of water into the exchanger (22), with a  
3 corresponding water-outlet hole (25c), and with a further hole (25d) for passage of  
4 water to the drawer (2), the said latter hole (25d) corresponding to a further two  
5 holes, (24d) and (26d), which are also directed towards the drawer (2) and are set,  
6 respectively, on the element (24) and on the element (26).

1 40. Cartridge-holder drawer (2) / heater (22) assembly in which the heater is  
2 according to Claims 34-39, in the said assembly the water passing as follows: the  
3 water comes into the hole (25b), passes into the coil (24e), drops into the hole  
4 (24c), runs along the coil (24f), returns upwards through the hole (24c), and  
5 comes out of the exchanger through the hole (25c); it then goes to a solenoid  
6 valve (106), returns to the hole (25d), passes through the holes (24d) and (26d),  
7 and then arrives at the chamber (26a), from where it is distributed, comes out from  
8 the holes in the plate (27), and drops through the cartridge in the drawer (2), from  
9 which it comes out through an outlet hole.

1 41. Assembly according to Claim 40, to be used in coffee machines according to  
2 Claims 1-34.

1 42. Use of the heater according to Claims 34-39 to heat liquids in coffee machines  
2 according to Claims 1-33.

1 43. Use of the heater according to Claims 34-39 to heat liquids in traditional coffee  
2 machines.

1 44. Use of extruded and machined-aluminium elements to build the machine  
2 according to any one of the previous claims.